BENEFITS OF "IMPROVED" GRAZING – MORE IMPORTANT NOW THAN EVER!

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At this Conference twelve years ago I talked about the "Benefits of Improved Grazing". We have had aspects of that theme at every Kentucky Grazing Conference since and also emphasized that message at 10 Heart of America Grazing Conferences and three National Grazing Conferences. With all that emphasis, why do I bring this up again and even have the nerve to say "More Important Now than Ever"? Well, the short answer is "things are different now!"

Things have changed and yes, things are very different relative to grazing now than they were when we started this conference. Some examples include: an increased interest and demand for grass-fed, forage-fed, pasture-based organic, natural, and other popular terms pertaining to more nutrients from "grazing" and less from concentrates and stored feed; greater environmental regulations that favor pasture-based animal production; more positive attitudes toward pasture-based animal products; and, of course, "economics".

Another major driving force in this movement has been input costs. You know this much better than I but a few examples are in order. Corn prices have increased 228%, diesel has increased 159%, and nitrogen fertilizer has increased 165% over the last decade and you can add your own increase in almost all input costs. All of these and other factors lead to the reality of this presentation "Benefits of Improved Grazing: MORE IMPORTANT NOW THAN EVER".

Grazing represents the cheapest way to feed ruminants on a cost per pound of nutrient basis. Stored feed is usually the single largest item in livestock budgets and cost or amount of stored feed is usually the best prediction of potential profitability in most beef cattle operations.

Controlled grazing, intensive grazing, management intensive grazing, rotational grazing, and intensive rotational grazing are only a few of the terms frequently used by grazing enthusiasts. Rotational grazing can help farmers to directly affect net profit by: increasing animal products per acre, reducing cost of machinery, fuel, facilities, etc., reducing supplemental feeding, reduce wasted pasture, improving the monthly distribution and yield of pasture, improving distribution and use of animal waste and fertilizer, improving botanical composition of pasture, minimizing the daily fluctuations in

intake and quality feed and more efficiently allocate pasture to animals based on quality needs. Let's review some potential benefits of "improving" our overall grazing program.

UTILIZATION - Grazing methods dictate how much of the overall pasture produced is actually utilized by the grazing animal. In order to better understand this aspect, let's first examine the difference between "seasonal and temporal utilization". Temporal utilization is defined as how much of the existing pasture we utilize during a grazing period and "seasonal" is the amount of the pasture utilized over the grazing season. In a continuous grazing program, these two are the same and can help explain why most continuous grazing programs only utilize a small amount of the total pasture produced for the season (Table 1). With rotational grazing or other grazing methods, we can improve our utilization, thus wasting less (Table 2).

Table 1. Amount of forage utilized with different grazing methods.

Method	% Utilization*
Greenchop	85 - 95
Haylage	80 - 95
Hay	70 - 85
Strip grazing	70 - 85
Rotation two times/day	70 - 80
Daily rotation	60 - 75
Rotation every two days	55 - 70
Three to seven day rotation	50 - 70
Three to five week rotation	40 - 60
Continuous grazing	20 - 50

*These values should only be used as a guide. Considerable variation can exist within and among categories.

Table 2. Increase in gain per acre with rotational compared to continuous grazing.

State	% Increase
Arkansas	44
Georgia	37
Oklahoma	35

YIELD - Pasture plants grow at different rates throughout the growing season. Cool-season grasses grow best in spring, good in late-summer-fall, and little during summer and winter (Figure 1). Amount of growth during each period is dependent on temperature and moisture. With continuous grazing, it is difficult to keep pasture plants in their most efficient photosynthetic growth stage. Some plants are often overgrazed while others are not grazed and become mature. This is especially a problem during

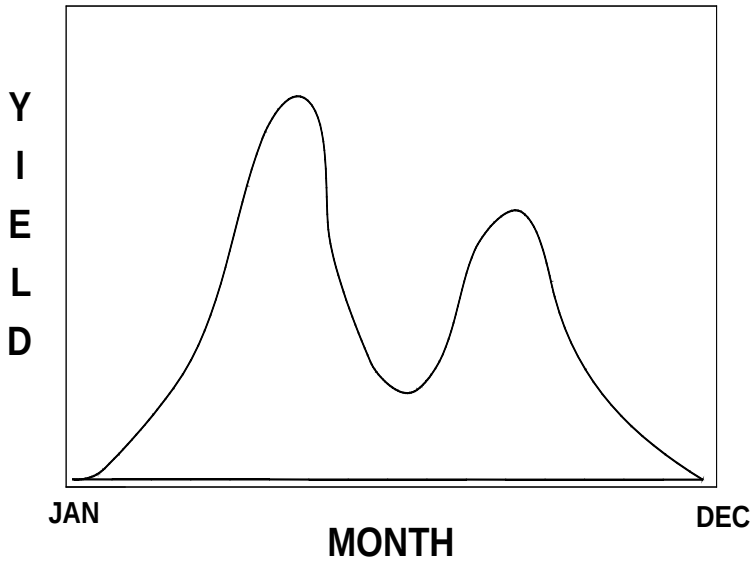

Figure 1. Growth patterns of cool-season grasses.

spring surplus. With rotational grazing, we can keep plants at a more efficient stage that can result in more animal product per acre (Table 3). During spring surplus, we can harvest selected paddocks for hay or haylage.

Table 3. Increase in production from alfalfa-orchardgrass with rotational and continuous grazing.

	% Increase over continuous
Carrying capacity	43
Milk production	40

SOURCE: VPI Bull. #45

QUALITY - Forage quality is highest when pasture plants are young and vegetative. Pasture quality is very closely coordinated with amount of leaves. With rotational grazing, we can usually manage “leaf” content and ultimately quality better than using most continuous methods (Table 4). In addition, quality for many cool season based

pastures is usually associated with legume content. With various rotational grazing methods, we can usually manage our legumes and keep them more productive and persistent than under continuous grazing methods.

Table 4. Percent leaves and persistence with different grazing methods.		
	Grazing Method	
	Rotational	**Continuous**
Percent leaves	46 - 49	31 - 36
Percent stand (3rd yr)	84	62

Mathews et.al. Univ. of Florida. 1994.

The yield quality relationship can be better explained by examining the gain per acre (yield) and gain per animal (quality) relationship (Figure 2).

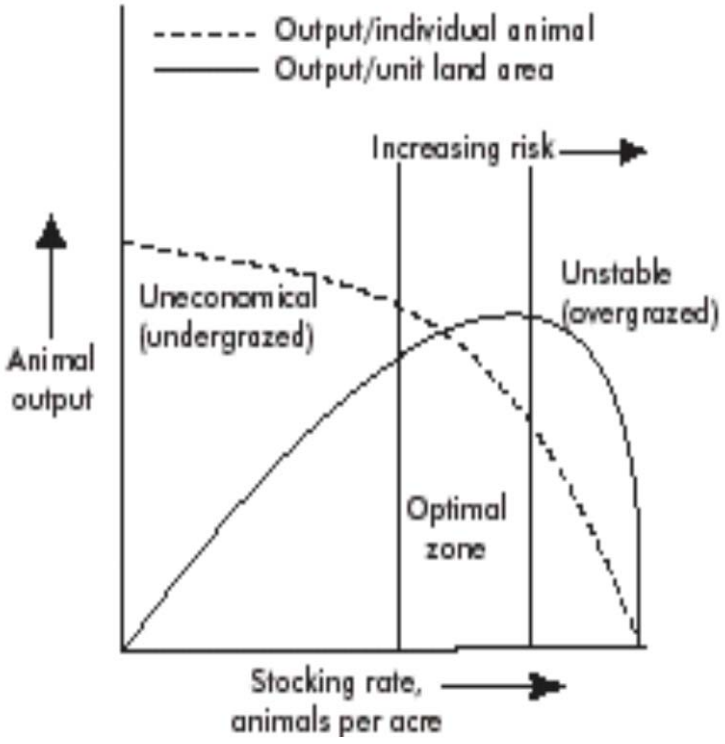

Figure 2. Relationship of Gain Per Acre and Gain Per Animal.

As stocking rate is increased less forage is available per animal. Individual animal output decreases as animals compete for forage and have less opportunity to select green, leafy forage. As a result of increased forage utilization, animal output per acre increases with stocking rate until individual animal gains are depressed to the point that the additional animals carried do not compensate for the loss. At high stocking rates, photosynthetic is reduced due to insufficient leaf area, plants are weakened, and forage growth is depressed.

EXTEND THE GRAZING SEASON - When improved grazing methods are used, forage utilization usually increases and "waste" decreased. With decreased waste, more pasture is available for grazing over a larger period of time. Missouri workers used a strip-grazing approach to utilize stockpiled tall fescue. When a three day pasture supply was compared to a fourteen day supply they increased cow-days per acre by 32 with a 56% increase in carrying capacity. Farmers repeatedly tell me that during drought conditions, rotational grazing methods results in more pasture over a longer period of time compared to continuous grazing.

STAND PERSISTENCE - Many pasture plants can be grazed continuously and continue to persist. Examples include Kentucky bluegrass, bermudagrass, endophyte infected tall fescue and white clover. Other plants will not persist for long when continuously overgrazed. Examples include alfalfa, most warm season perennial grasses, and warm season annuals. Even the plants capable of withstanding continuous grazing will usually be more productive under some grazing method that permits time for rest and regrowth.

ANIMAL PERFORMANCE - As we noted when discussing Figure 2 "Relationship between gains per acre and gains per animal," stocking rates are critical in determining yield of both plant and animal. One study conducted by a close friend and highly respected forage scientist illustrates what I believe is the potential improvement when comparing "rotational and continuous grazing systems" (Table 5).

Table 5. Gain per acre, gain per animal, and hay required for wintering a beef cow using different grazing methods.

	Percent change of rotational over continuous grazing
Stocking rate	+38
Calf gain/acre	+37
Hay fed/cow	-32

SOURCE: Dr. Carl Hoveland, Univ. of Georgia.

ANIMAL HEALTH - I wish I had several years of research data to make a strong statement about improved animal health with improved grazing method. Unfortunately, I am not aware of many studies in this area. Farmers tell me and common sense suggests that if you are using a system that requires you to move animals on some schedule, you have a chance to observe more frequently for any herd health problems. Controlling problems before they get serious is a health benefit for the animal and an economic benefit for the owner.

ENVIRONMENTAL - Improving grazing systems can have a positive impact on various environmental issues, especially "water". Most improved grazing systems involve reducing pasture size, more water points, and often fencing animals out of ponds and streams or designing limited access. Each system that keeps animal manure and urine out of the water supply can have a potential environmental benefit.

Another issue involves manure and urine distribution. Approximately 75-85% of nutrients consumed by grazing animals are returned through animal manure and urine. With large pastures grazed continuously, much of the manure and urine is deposited near the water source and shade. Research has shown that other grazing methods can results in better distribution.

ECONOMICS - Making more money by changing your grazing system is not automatic. Just putting more fences and water in may just cost your money and time if it doesn't fit into the overall plant-animal-environment system. Improving your grazing system certainly offers many opportunities and indeed the opportunity to improve our bottom line; however, I again caution that we need the "system" that consists of adequate fertility, matching plant species and varieties, managing plant pest problems, matching pasture quality to animal needs, having good quality-healthy animals that can make best use of pasture available, and an overall plan to optimize grazing and minimize stored feed required.

With all of the above as "cautions", let me now tell you what I believe about improved grazing and its opportunity for producers. I believe that our greatest opportunity for "IMPROVEMENT" rests squarely under the "Grazing" umbrella. I know of no other principle or practice that I feel offers livestock producers more potential. Again, I wish I had ten years of data that would document my belief; however, I do not. I do want to share some data from Pennsylvania (Table 6) that shows what farmers have observed using four different forage harvesting and utilization systems. In these studies, rotational grazing returned more profit per acre than continuous grazing, hay or corn silage. Missouri workers, Table 7, showed a drastic reduction in wintering cost per cow using various grazing options. Days of "hay feeding" were reduced by over 65% with different grazing options.

Table 6. Enterprise budgets for pasture and forage crops.				
	Intensive pasture	**Continuous pasture**	**Hay**	**Corn silage**
	---------- per acre ----------			
Profit	$129	$75	$20	$58

SOURCE: Farmer Profitability with Intensive Grazing. L. Cunningham and G. Hanson. Penn. State Univ. 1995.

Table 7. Daily and seasonal forage costs for alternative wintering strategies at typical yields, costs, and period of use based on 100-cow herd.				
Winter feeding period from Dec 1 to April 10				
Forage Source	**Hay**	**Cornstalks**	**Stockpiled tall fescue**	**Ryegrass + cereal rye**
$/cow/day	$1.32	$0.05	$0.31	$0.61
Days of use	130 hay	60 stalks	90 graze	90 graze
		70 hay	40 hay	40 hay
Wintering cost	$172	$95	$70	$108

SOURCE: Jim Gerrish, University of Missouri.

A grazing method is a tool that allows producers to efficiently harvest the forage with livestock and maintain the pasture in a productive state. Several methods can be used and each method requires management control to be most successful. This involves variable stocking rates that may be achieved by altering animal number per acre, altering the size of the land area to a fixed number of animals, harvesting surplus forage for hay, haylage, or round bale silage, and/or mowing excess growth and weeds.

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